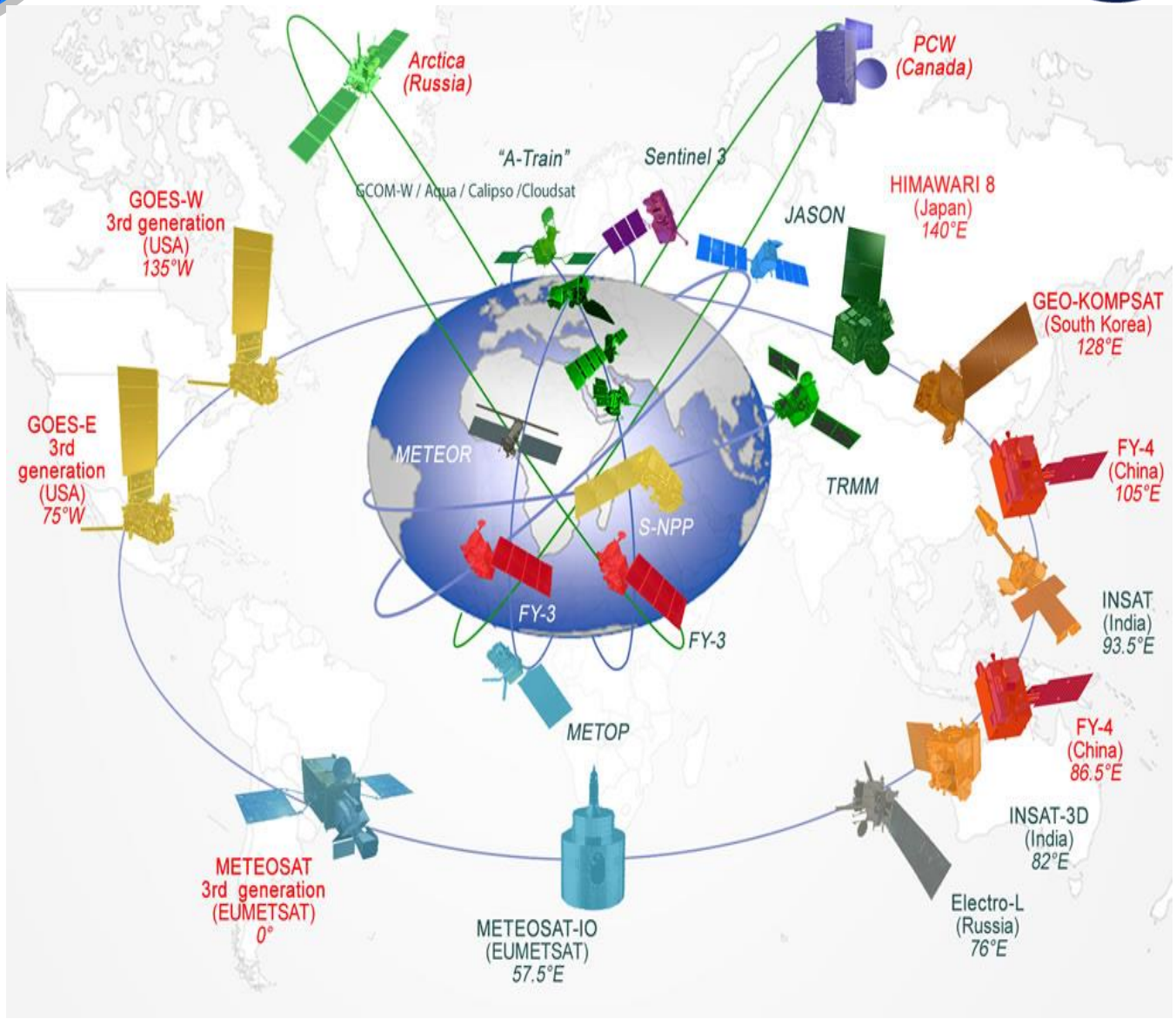
GOES-R Program

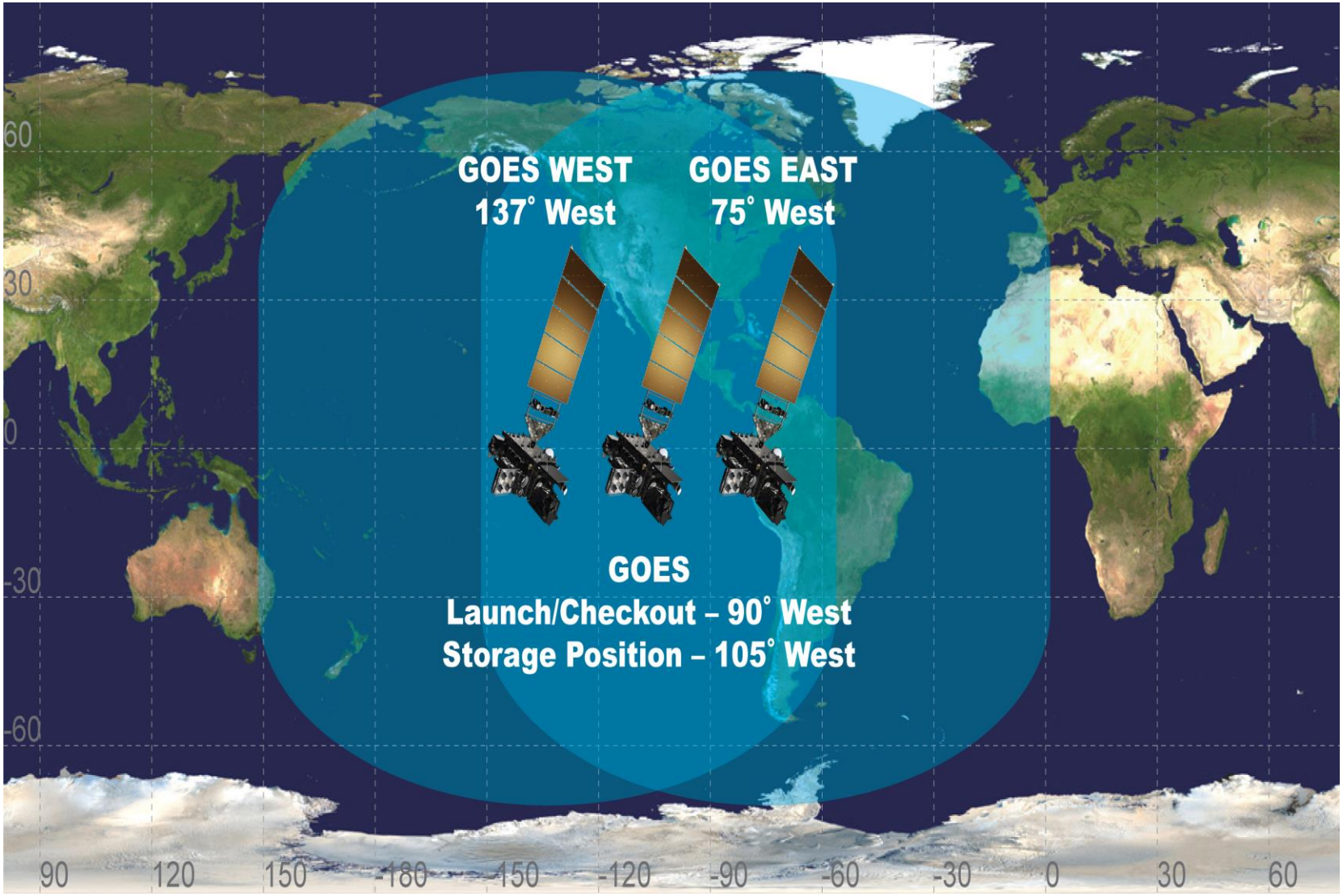
Craig Keeler

Deputy, Program Systems Engineering

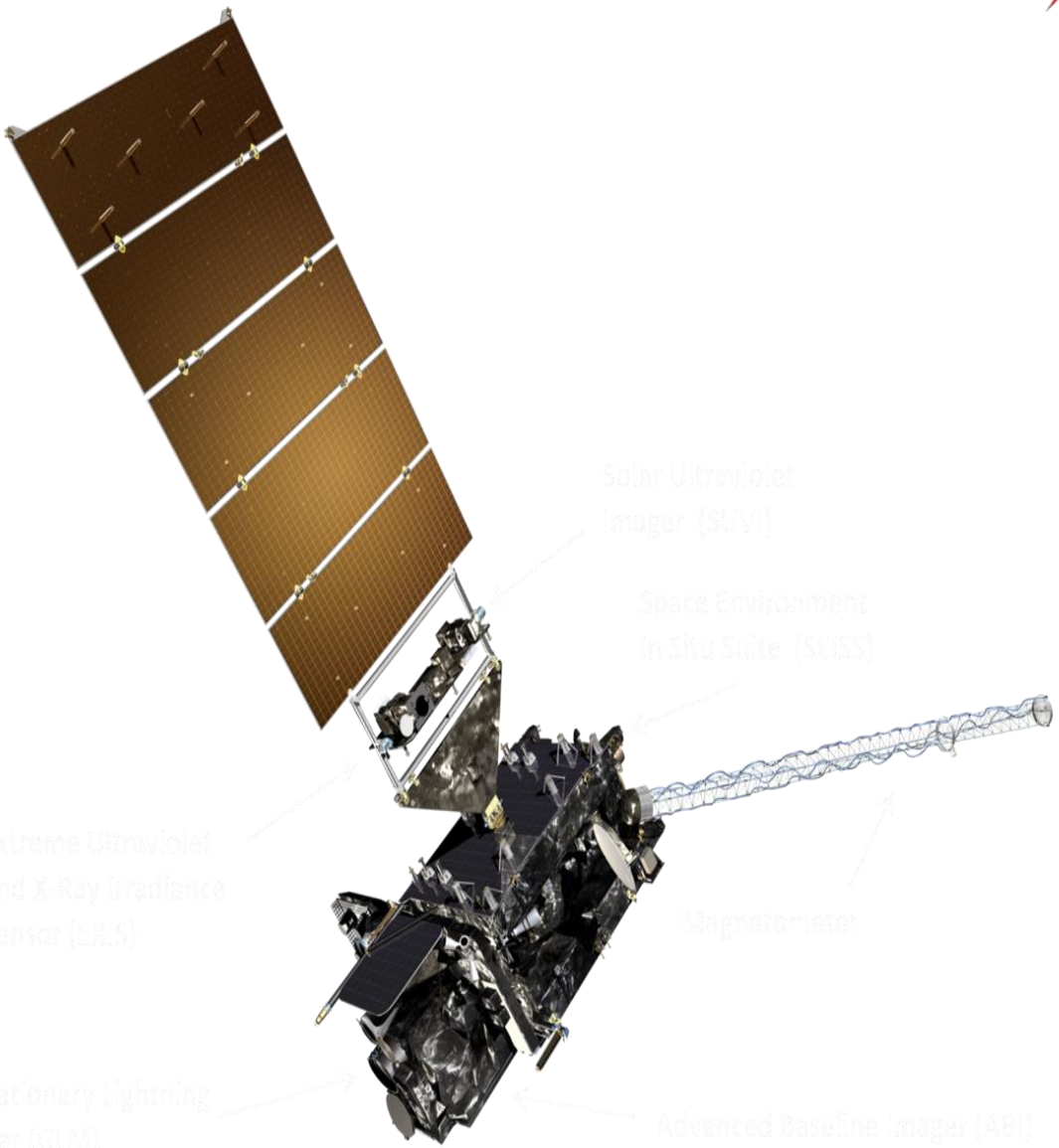
Global Observing System



GOES-R Constellation



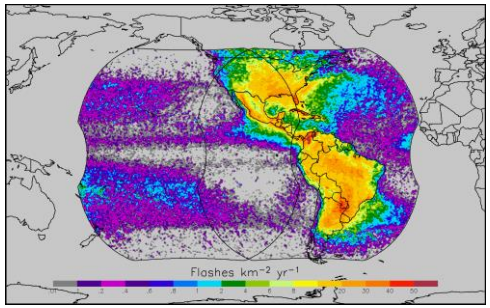
GOES-R Spacecraft



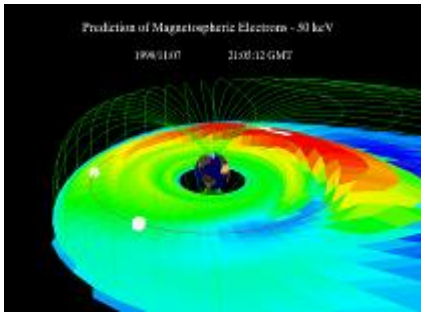
Mission Overview

The GOES-R Series is the next generation of GOES satellites that will provide a major improvement in quality, quantity, and timeliness of data collected. The GOES-R Series will provide improved detection and observations of meteorological phenomena that directly impact public safety, protection of property, and economic health and development

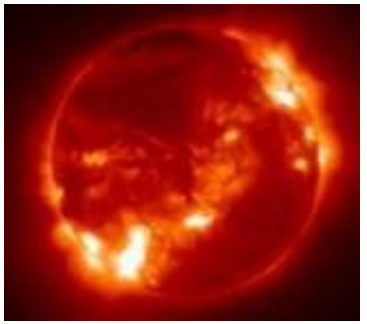
Visual & IR Imagery



Lightning Mapping



Space Weather Monitoring



Solar Imaging

- ✓ Improve hurricane track & intensity forecasts
- ✓ Increase thunderstorm & tornado warning lead time
- ✓ Improve aviation flight route planning
- ✓ Data for long-term climate variability studies

- ✓ Improve solar flare warnings for communications and navigation disruptions
- ✓ More accurate monitoring of energetic particles responsible for radiation hazards to humans and spacecraft
- ✓ Better monitoring of Coronal Mass Ejections to improve geomagnetic storm forecasting

GOES-R Instruments

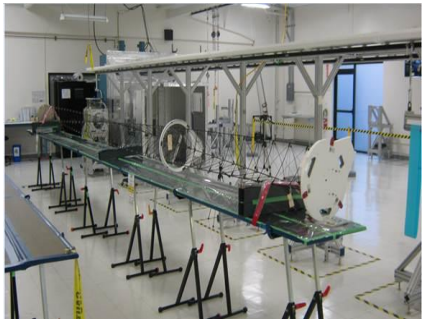
Earth Pointing

Advanced Baseline Imager (ABI)

Geostationary Lightning Mapper (GLM)

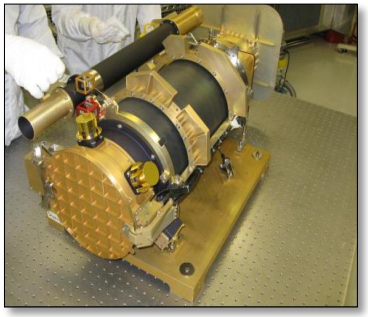
In-Situ

Space Environment in-Situ Sensor Suite (SEISS)

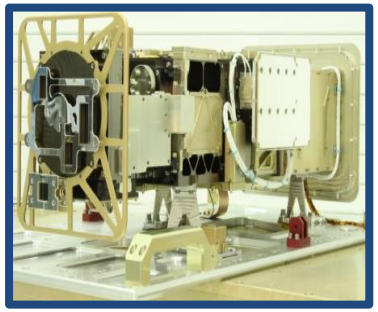


Magnetometer

Sun Pointing

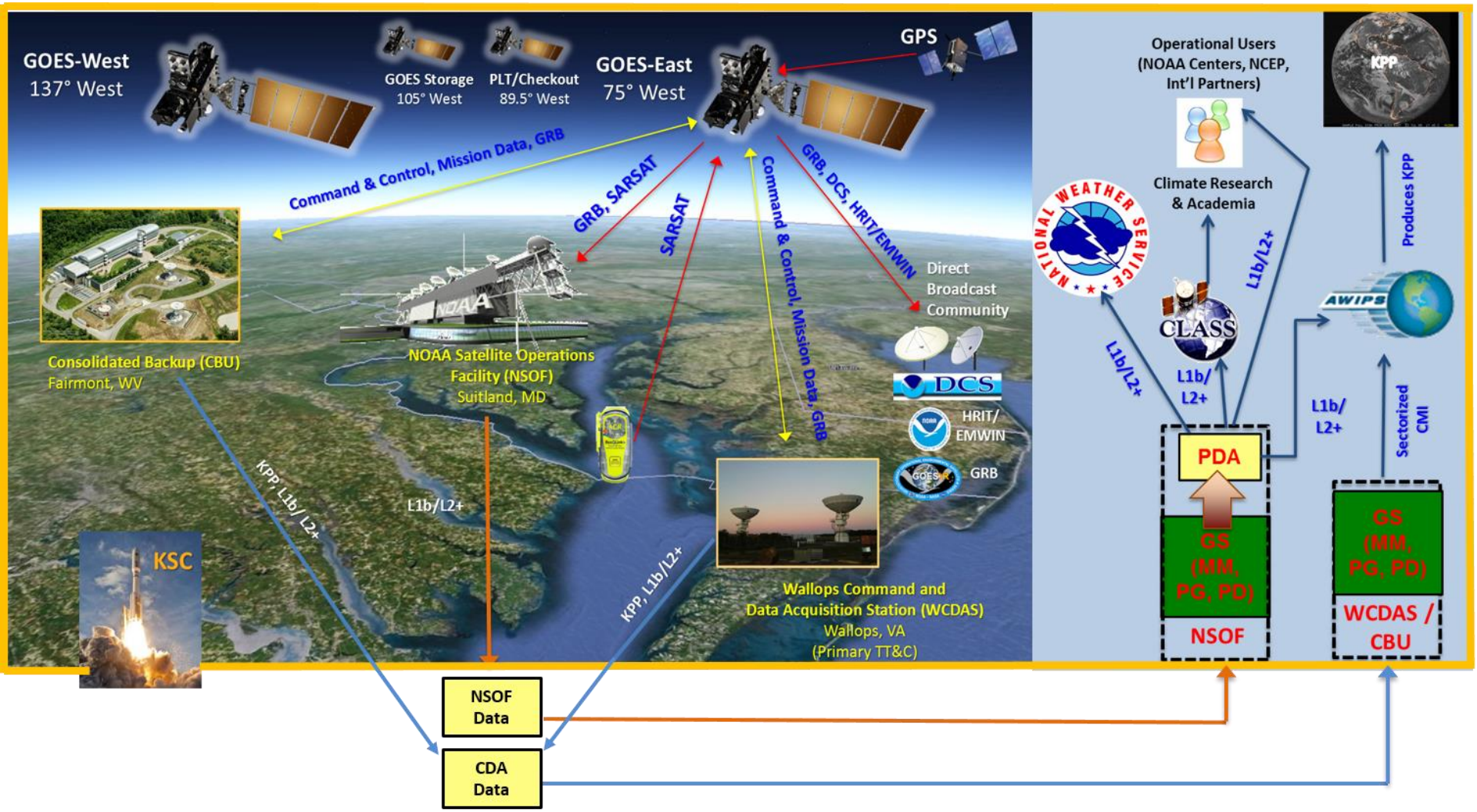


Solar UV Imager (SUVI)



Extreme UV and X-ray Irradiance Sensors (EXIS)

NOAA Ground System



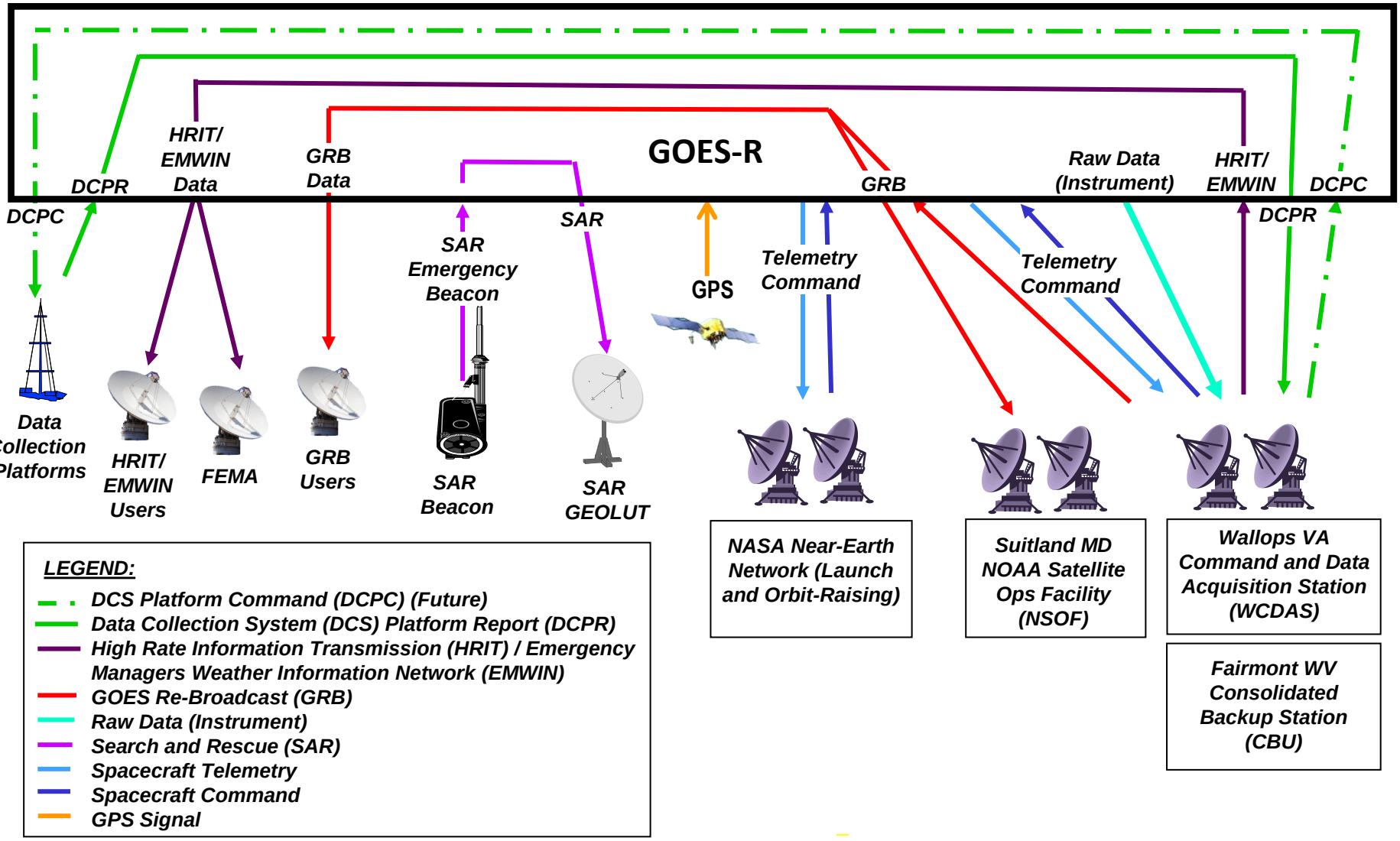
Consolidated Backup Facility

Antenna Upgrades

WCDAS & CBU

NSOF

Satellite Interfaces



LEGEND:

- DCS Platform Command (DCPC) (Future)
- Data Collection System (DCS) Platform Report (DCPR)
- High Rate Information Transmission (HRIT) / Emergency Managers Weather Information Network (EMWIN)
- GOES Re-Broadcast (GRB)
- Raw Data (Instrument)
- Search and Rescue (SAR)
- Spacecraft Telemetry
- Spacecraft Command
- GPS Signal

Program Description

Program: GOES-R Series (R/S/T/U Satellites)
Director: Gregory Mandt
Partners: NOAA and NASA
Host Center: Goddard Space Flight Center (GSFC)
Mission: Provide continuous imagery and atmospheric measurements of Earth's Western Hemisphere and space weather

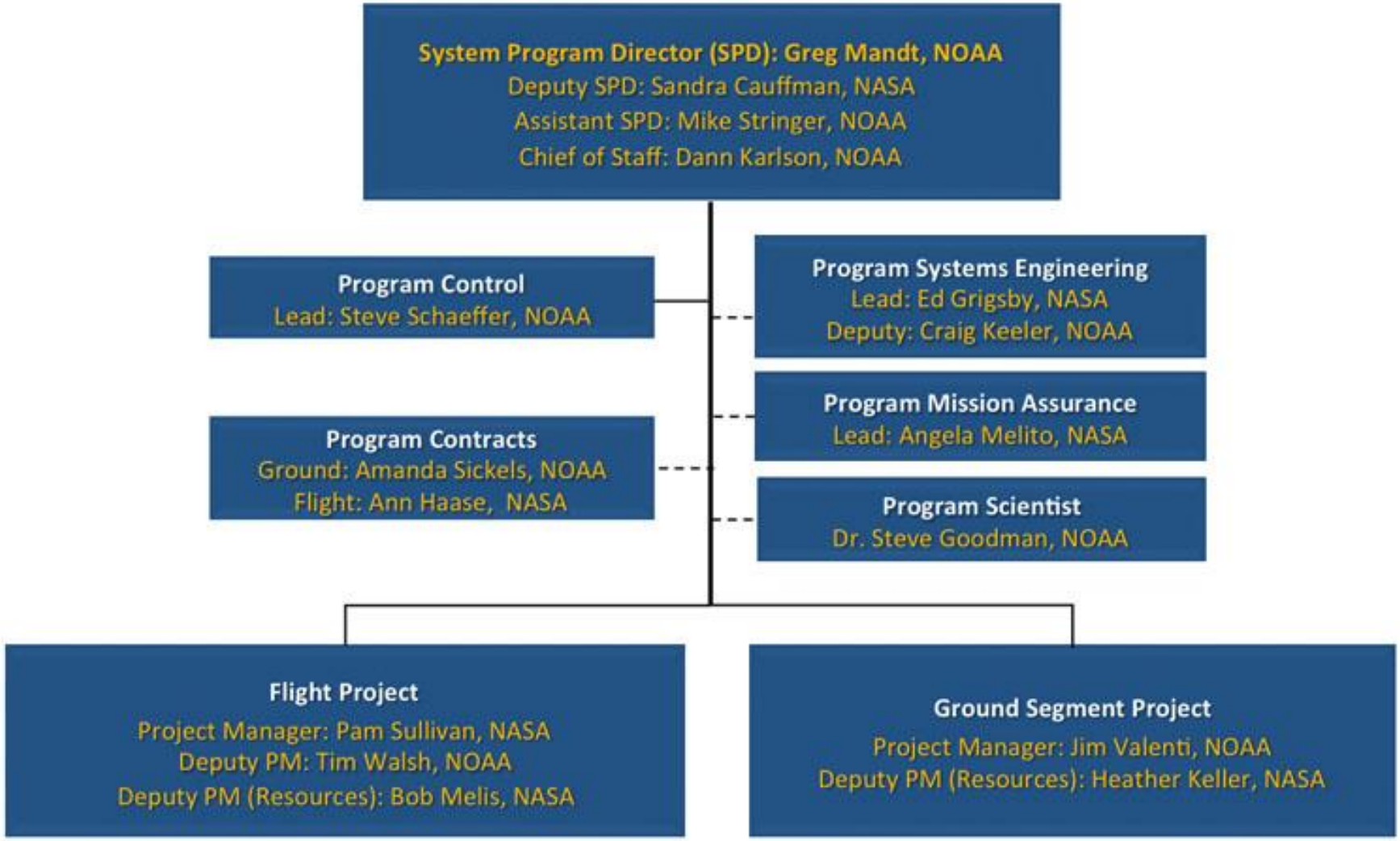
Launch Planning Dates:

GOES-R	Oct 2016
GOES-S	1st Qtr FY18
GOES-T	3rd Qtr FY19
GOES-U	1st Qtr FY25

Budget:

Program Budget	Prior yrs	FY15	FY16	FY17	FY18	FY19	FY20	FY21+	Total
Total ($M)	5,106.2	974.9	871.8	752.8	518.5	335.9	214.7	1,375.2	10,150.1

Program Organization



Contractor Teams

GOES-R collaborates with industry partners located across the United States to fulfill GOES-R mission requirements. Lockheed Martin is the prime Space Segment contractor and Harris is the prime Ground Segment contractor. Each segment has numerous supporting sub-contractors.

Lockheed Martin Space Segment Program

LOCKHEED MARTIN

Lockheed Martin Team
Denver, CO
Newtown, PA
Greenbelt, MD
Sunnyvale, CA
Palo Alto, CA
Stennis, MS
Cape Canaveral, FL

AASC
Lexington, MA

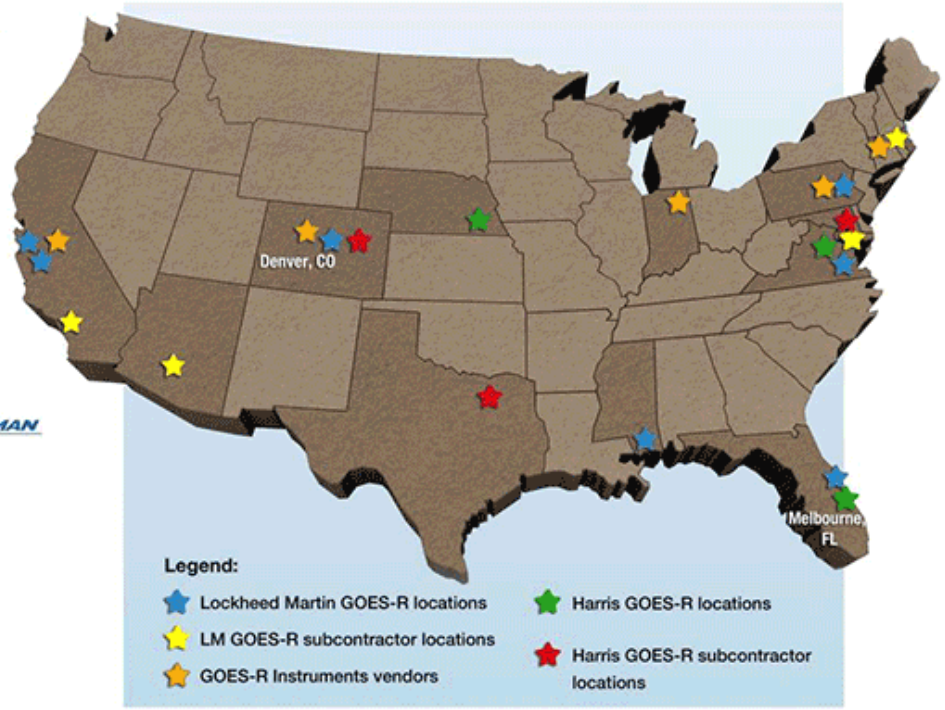
Honeywell
Columbia, MD

NORTHROP GRUMMAN
Redondo Beach, CA

JACKSON AND TULL
Columbia, MD

SAIC
McLean, VA

A.R.E.S. CORPORATION
Greenbelt, MD



Harris Ground Segment Program

HARRIS

Harris Team
Melbourne, FL
Greenbelt, MD
Omaha, NE

aer
Lexington, MA

BOEING
Springfield, VA
Denver, CO

CARR Astronautics
Greenbelt, MD

GENERAL DYNAMICS
SATCOM Technologies
Richardson, TX

Honeywell
Columbia, MD

wyle
Silver Spring, MD

GOES-R Instruments

EXELIS
Ft. Wayne, IN
Advanced Baseline Imager (ABI)

LOCKHEED MARTIN
Advanced Technology Corp, Palo Alto, CA
Geostationary Lightning Mapper (GLM)

LOCKHEED MARTIN
Advanced Technology Corp, Palo Alto, CA
Solar Ultra Violet Imager (SUVI)

LASP
Boulder, CO
Extreme ultraviolet and X-ray Irradiance Sensor (EXIS)

Carlisle, MA
Space Environmental In-Situ Suite (SEISS)

LOCKHEED MARTIN
Newtown, PA
Magnetometer (MAG)

ProTech Requirements

- Modeling and simulation support
  - Availability analysis for launch planning
- Development and deployment support
  - Post launch testing and calibration
- Requirements traceability and alternatives
  - Final configuration for operations
- Economic analysis and architecture
  - Threats from spectrum repurposing

Requirements – Cont.

- Coordination with global observation systems
- Sustainment of NOAA operations
- Planning for new NOAA capabilities
- Transition to new technologies
- Integrated operations analysis
- User readiness planning
- Support federal spectrum relocation planning
- Coordinate with NOAA partners, including international organizations
- Enterprise transition planning

Requirements – Concl.

- Applied research and consulting
- Data collection and surveys
- Program and project management